

NOTES ON ORTHOPTERA FROM COLORADO, NEW MEXICO, ARIZONA, AND TEXAS, WITH DESCRIPTIONS OF NEW SPECIES.

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The following paper deals with three separate collections: (1) a large collection from Colorado, including a few from just across the line in New Mexico, made by Dr. H. G. Dyar and myself during the months of May, June, July, and August, 1901; (2) a small collection made in Arizona, mostly at Williams and Hot Springs, by Messrs. Schwarz and Barber during the summer of 1901; and (3) a small collection made by the writer in Texas in June and July, 1902. This material forms part of the collection of the U. S. National Museum.

The Colorado collection, which furnishes material for the greater part of this paper, but partially confirms the result reached by Dr. Dyar regarding the life zones of that State as recently described by him^a—that is, that there are four faunal regions in Colorado: prairie, foothill, alpine, and western slope. The orthopterous fauna indicate the first three zones only, which are in most cases quite sharply defined, but there are a number of species that occur in two or more of the zones. The line between the prairie and the foothill faunas is exceedingly well defined at some places, while at other places the transition from one to the other is more gradual.

The primary aim of the Colorado expedition was to work out the life history of Lepidoptera, and not to collect Orthoptera, and in consequence it was not possible to visit all parts of the State. Therefore the range worked over is not extensive and does not include places inaccessible by rail. A few specimens from Middle Park were purchased from E. J. Osler, a professional collector of Denver, and are included in this paper.

The various localities visited by the writer in Colorado, their altitude, location, and notes on the vicinity are given in the following alphabetical list:

Baileys, Park County; altitude, 7,714 feet.—This place is some miles up the Platte canyon. One day only was spent there and but nine species of Orthoptera were taken.

^aProc. U. S. Nat. Mus., XXV, 1902, p. 369.

Boulder, Boulder County; altitude, 5,335 feet.—Two trips were made to this place and a little collecting done in and along the base of the foothills just back of the town. Insects were not at all numerous at the time the visits were made and but five species of Orthoptera were taken.

Chama, Rio Arriba County, New Mexico; altitude, 7,863 feet.—Half an hour only was spent here, six species being taken, of which *Diososteira carolina* was the most common.

Chimney Gulch.—See Golden.

Cripplecreek, Teller County; altitude, 9,396 feet.—Half a day was spent at this interesting locality out near the Golden King gold mine. *Circotettix undulata* was the common species.

Cumbres, Conejos County; altitude, 10,015 feet.—One hour of profitable collecting was put in here when it began to rain, and a wet afternoon was utilized in riding down the western slope of the mountains on a freight car rather than wait in a section house for the passenger train next day. Five species only were taken, all alpine forms, one of them a new species.

Delta, Delta County; altitude, 4,980 feet.—Several hours were spent across the river from this place, mostly in investigating garden insects. Two species of *Eoloplus* were taken. At this place some damage was threatened by *Melanoplus differentialis*.

Denver, Arapahoe County; altitude, 5,198 feet.—Most of the collecting in the vicinity of Denver was done in two localities, one south of the city, on the prairie just beyond the city park, and the other on the opposite side of the city. Nearly forty species and many specimens were taken here.

Durango, La Plata County; altitude, 6,520 feet.—A few hours were spent collecting north and east of this town. The limited time prevented the discovery of the excellent collecting grounds said by Mr. Osler to exist in that vicinity.

Fort Collins, Larimer County; altitude, 4,972 feet.—Two visits were made to this productive locality and many desirable specimens taken, mostly north and west of town. No opportunity presented itself to go up into the neighboring foothills, and the specimens taken were therefore all prairie forms, or ones common to two or more faunal regions. One species only, *Eremopedes balli*, may be considered as belonging strictly to the foothill fauna. Forty-eight species were taken at this place.

Glenwood Springs, Garfield County; altitude, 5,758 feet.—Three stops were made at this place, but little collecting was done. A few specimens were taken out east of town a half mile or so and also a few in town near the station. But seven species were taken, of which four belong to the genus *Melanoplus*.

Golden, Jefferson County; altitude, 5,667 feet.—This is a good collecting ground and very accessible from Denver, being about 13 miles

west of there near the foothills. The collecting was done on the prairie between the town and the foothills, less than a quarter of a mile in width, and up the canyon known as Chimney Gulch to the top, about a thousand feet higher. Over fifty species were collected at this locality. The prairie and foothill faunas are here quite distinctly and abruptly divided.

Grand Junction, Mesa County; altitude, 4,594 feet.—Two stops of short duration were made here. The collecting was done northeast of town and also in town just across the railroad from the station, where many fine specimens of *Melanoplus differentialis* were taken.

Mancos, Montezuma County; altitude, 7,008 feet.—Two species were taken near the station while the train stopped, *Melanoplus femur rubrum* and *Stenobothrus curtispennis*.

Monterista, Rio Grande County; altitude, 7,665 feet.—A bicycle trip several miles out of town was taken August 13. Insect life of all kinds was very scarce and but nine species of Orthoptera were taken, the most desirable one of which was probably *Xenobius utahensis*.

Montrose, Montrose County; altitude, 5,811 feet.—Half an hour's collecting in the vicinity of the station resulted in the capture of nearly a dozen species.

Morrison, Jefferson County; altitude, 5,753 feet.—Several visits were made here. Just south of the station, across the creek beyond and to the right of the schoolhouse, grasshoppers were found to abound in countless numbers. Collecting trips were made to and beyond the picturesque red sandstone formations northwest of town and up the canyon into the foothills. But two species were collected in the foothills, however, *Trimerotropis similis* and *Gomphoceris claratus*. The bulk of the specimens taken on the prairie at this place was *Melanoplus occidentalis*.

Palisade, Mesa County; altitude, 4,741 feet.—At this little town, 12 miles from Grand Junction, *Eoloplus chenopodii* was taken in considerable numbers on the plants just across the railroad from the station. A few other species, including a new species, were taken in the immediate vicinity.

Pikes Peak, El Paso County; altitude, 8,913 feet.—A day was spent here and the ascent of the peak made.^a The above altitude is that of the halfway house, and it is to that locality which all the Pikes Peak labels refer unless otherwise specified.

Pine Grove, Park County; altitude, 6,738 feet.—This is a small resort some miles up Platte Canyon, and there a couple of days were spent collecting along the railroad and up a side canyon for a mile or so, leading up probably a thousand feet above the town. A dozen species were taken here, mostly true foothill forms.

Platte Canyon, Douglas County; altitude, 5,492 feet.—Numerous trips were made to this place, which is but a station at the mouth of

^a See account in Proc. Ent. Soc. Wash., V, 1902, pp. 74-82.

Platte Canyon. Collecting was done up the canyon as far as a small side gulch known as Mill Gulch, and up that gulch for more than a mile, as well as up other gulches for lesser distances. But most of the Orthoptera were taken near the mouth of the canyon. But ten species were taken here.

Rico, Dolores County; altitude, 8,737 feet.—Insects were very scarce here, two hours' collecting resulting in but three species of Orthoptera and practically nothing else. The Orthoptera were all alpine forms.

Salida, Chaffee County; altitude, 7,050 feet.—Two weeks were spent here, including a couple of visits. Other duties prevented much time being devoted to collecting Orthoptera, and nearly every afternoon it rained, but still quite a number of good things were taken. By far the most productive locality was the side of the large hill, called Tenderfoot Mountain, just across the railroad from the station. Here *Eoloplus plagosus* and *Derotmema haydeni* occurred in numbers. *Leprus cyaneus* was also taken here, though not so numerous and usually some distance farther up the hill.

Sedalia, Douglas County; altitude, 5,835 feet.—This small town is a few miles south of Denver, and is in a broad valley formed by the foothills on the west and high mesas on the east. Collecting was done across the entire valley, but only eleven species were taken.

At the above localities over a hundred species of Orthoptera were taken and the collections from Arizona and Texas bring the number up to one hundred and fifty-four. All are here mentioned, even if only for the value attached to record of exact locality, but many of the species are represented by a considerable number of specimens and thus usually furnish some notes of value on variation or distribution.

Family BLATTIDÆ.

1. PHYLLODROMIA GERMANICA Linnæus.

Blatta germanica LINNÆUS, Syst. Nat., 12th ed., II, 1767, p. 688.

One nymph of this species was taken at Glenwood Springs on August 18.

2. BLATTA ORIENTALIS Linnæus.

Blatta orientalis LINNÆUS, Syst. Nat., 10th ed., I, 1758, p. 424.

Two specimens, both males, one at Denver and one at Pueblo in August, the latter by E. J. Osler.

3. ISCHNOPTERA UHLERIANA Saussure.

Ischnoptera uhleriana SAUSSURE, Rev. Mag. Zool., XIV, 1862, p. 169.

One specimen at Victoria, Texas, in June.

4. PERIPLANETA AMERICANA Linnæus.

Blatta americana LINNÆUS, Syst. Nat., 10th ed., 1, 1758, p. 424.

This insect is very common in southern Texas, indeed amounting to a veritable pest. It comes into the houses through the open windows and but for the ever-present canopy of netting over the beds in that part of the country would very probably establish itself as an unwelcome and very uncomfortable spiny bedfellow. Happily the netting prevents this, but unhappily the *Acantha lectularia* is not so easily excluded.

A razor case left for a couple of weeks in a drawer in one of Victoria's leading hotels, had the covering nearly all eaten off by this large roach. The ordinary house species, *Phyllodromia germanica* and *Blatta orientalis*, do not appear to be common in localities where this species thrives.

5. PERIPLANETA TRUNCATA Krauss.

Periplaneta truncata KRAUSS, Zool. Anzeiger, XV, 1892, p. 165.—SAUSSURE and ZEHNTNER, Biol. Cent. Amer. Orth., I, 1893, p. 74.

Two female specimens of this species were collected in the laboratory of the boll weevil investigation at Victoria, Texas, in the early part of July, 1902. This is a new insect to the United States, but there can be but little doubt of the correctness of the identification. It is the variety "a" of Saussure and Zehntner.

6. HOMŒOGAMIA APACHA Saussure.

Homœogamia apacha SAUSSURE, Rev. Suisse de Zool., I, 1893, p. 396.

The collection of the U. S. National Museum contains specimens of this species from Texas, Colorado, Arizona, and California. This is the first record of this species from the United States, though it seems to be not at all rare. *Homœogamia subdiaphana* Scudder seems somewhat allied to this species, but Mr. Rehn, who has taken *subdiaphana* in New Mexico, says they are distinct.

Family MANTIDÆ.

7. YERSINIA SOLITARIA Scudder.

Yersinia solitaria SCUDDER, Can. Ent., XXVIII, 1896, p. 209.

Two immature specimens of this species were taken, one at Fort Collins and one at Golden, the former on August 9 and the latter on July 17.

8. LITANEUTRIA MINOR Scudder.

Stigmatoptera minor SCUDDER, Rept. U. S. Geol. Surv. Nebr., 1871, p. 251.

Females of what I take for this species were taken at Golden and Fort Collins in August. The greedy habits of this species were recently noted.^a

Family PHASMIDÆ.

9. DIAPHEROMERA DENTRICUS Stal.

Diapheromera dentricus STAL, Rec. Orth., III, 1875, p. 76.

One male, June 21, at Victoria, Texas. This specimen was on weeds by the roadside. Mr. Mitchell tells me that this fine large walking stick is not uncommon at times on grape vines in the river bottoms.

Family ACRIDIIDÆ.

Subfamily TETTIGINÆ.

10. TETTIX CRASSUS Morse.

Tettix crassus MORSE, Journ. N. Y. Ent. Soc., VII, 1899, p. 201.

Two specimens of what Professor Morse thinks is probably this species were taken at Platte Canyon on May 10. The median carina of the thorax is marked with white, strongly contrasted with the rest of the insect.

11. TETTIX INCURVATUS Hancock.

Tettix incurvatus HANCOCK, Amer. Nat., XXIX, 1895, pp. 761-762, fig. 1.

Five specimens, Platte Canyon May 10, in company with *T. crassus*. Dr. Hancock verified this determination.

12. PARATETTIX CUCULLATUS Burmeister.

Tettix cucullatus BURMEISTER, Handb. Ent., II, 1838, pp. 658-659.

One female at Fort Collins August 11. Professor Morse examined this specimen and pronounced the determination correct.

Subfamily TRYXALINÆ.

13. MERMIRIA TEXANA Bruner.

Mermiria texana BRUNER, Proc. U. S. Nat. Mus., XII, 1890, pp. 53-54, pl. 1, fig. 11.

One pair at Fort Collins on August 9, and one male nymph, which is probably of this species, at Salida on August 2.

^a Ent. News, XIII, 1902, p. 60.

14. SYRBULA ADMIRABILIS Uhler.

Stenobothrus admirabilis UHLER, Proc. Ent. Soc. Philad., II, 1864, p. 553.

Both mature and immature specimens of both sexes taken at Victoria in June and July.

15. ACROLOPHITUS HIRTIPES Say.

Gryllus hirtipes SAY, Amer. Ent., III, 1828, p. 78, pl. xxxiv.

The "green fool," as Dr. Dyar and I christened this handsome insect, is very common along the eastern foothills, more than a hundred being taken, mostly at Golden. Young nymphs were taken early in May, and mature individuals began to appear about the middle of July.

16. ERITETTIX NAVICULA Scudder.

Gomphocerus navicula SCUDDER, Ann. Rept. Chief Eng., 1876, p. 506.

Three males, seven females, Sedalia June 12; Denver May 7; Boulder May 27; Golden June 5. One of the females taken at Golden on June 5 is placed here with some hesitation. It is remarkable in having the pronotum uniformly fuscous dorsally and without a trace of supplementary carinae on the pronotum, though they are present on the head and diverge anteriorly to meet the raised margins of the vertex. The upper half of the lateral lobes of the pronotum is piecous, a coloration unlike any other specimen of any species of this genus that I have seen. The original description of *navicula* offers no distinguishing features to separate it from *E. tricarinatus*, which was described from the female sex alone. In fact, the females of the two species, as I have them determined in the collection of the U. S. National Museum, are inseparable, but the males are very readily distinguished, those of *navicula* having the antennae gradually enlarged, the club composing about one-third of the entire length, while in *tricarinatus* the enlargement of the antennae is abrupt, the club composing no more than one-sixth of the entire length. The Museum contains specimens of *navicula* from Wyoming and Colorado in considerable numbers. *Tricarinatus* does not appear to occur in Colorado, all the Museum material being from Wyoming, Montana, and the Dakotas.

17. AMPHITORNUS BICOLOR Thomas.

Stenobothrus bicolor THOMAS, Ann. Rept. U. S. Geol. Surv. Terr., V, 1872, p. 465.

Three males, eight females, Golden June 6 to 27; Fort Collins August 9 and 11; Denver July 7 and 16.

18. OPEIA OBSCURA Thomas.

Orygoryphus obscura THOMAS, Ann. Rept. U. S. Geol. Surv. Terr., V, 1871, p. 466.

One male, eleven females, Golden August 21; Fort Collins August 10.

19. CORDILLACRIS CINEREA Bruner.

Ochilidea cinerea BRUNER, Proc. U. S. Nat. Mus., XII, 1890, pp. 52-53.

Three males, one female, Salida August 21; Morrison June 25.

20. CORDILLACRIS CREMULATA Bruner.

Ochilidea cremulata BRUNER, Proc. U. S. Nat. Mus., XII, 1890, pp. 51-52.

Five males, two females, Montevista August 13; Morrison June 29; Denver July 16.

21. CORDILLACRIS OCCIPITALIS Thomas.

Stenobothrus occipitalis THOMAS, Rept. U. S. Geol. Surv. Terr., V, 1873, p. 81.

Fourteen males, eleven females, Morrison June 23; Fort Collins August 9 and 11; Denver July 17.

22. PHLIBOSTROMA QUADRIMACULATUM Thomas.

Stenobothrus quadrimaculatum THOMAS, Ann. Rept. U. S. Geol. Surv. Terr., II, 1871, pp. 166, 280.

Thirty-seven males, forty-four females, Golden July 12 to August 21.

23. ORPHULELLA PELIDNA Burmeister.

Gomphocerus pelidna BURMEISTER, Handb. Ent., II, 1838, p. 650.

One male at Victoria, Texas, in June, 1902, and two males from widely separated localities in Colorado, one from Grand Junction on August 17 and one from Fort Collins on August 10. The specimen from Texas is a little over the usual size, measuring as follows: Length of body, 20.5 mm.; elytra, 18 mm.; hind femora, 12 mm.

The larger males of this species superficially resemble the dark form of the males of *Syrbula admirabilis* very closely.

24. ORPHULELLA PICTURATA Scudder.

Orphulella picturata SCUDDER, Can. Ent., XXXI, 1899, pp. 178, 182.

Many specimens of both sexes collected at Victoria, Texas, in June and July, some of them taken in cotton fields. This is a very variable species and there are both green and brown forms.

25. ORPHULELLA SALINA Scudder.

Orphulella salina SCUDDER, Can. Ent., XXXI, 1899, pp. 179, 185-186.

Two specimens from Colorado, one male at Montrose on August 17, and one female at Grand Junction on July 7.

26. *DICHROMORPHA VIRIDIS* Scudder.

Chlocallis viridis SCUDDER, Bost. Journ. Nat. Hist., VII, 1862, p. 455.

Chlocallis brunnea SCUDDER, Proc. Bost. Soc. Nat. Hist., XVII, 1875, p. 510.

Both sexes of this species, together with the nymphs, were found plentiful at Victoria, Texas, in June and July. This species varies in the character of the lateral carinae of the pronotum, some having the carinae parallel and others quite noticeably bowed out in the center, both forms occurring together. One specimen before me from Florida has the vertex abnormally acute. I have carefully studied the type of *brunnea* in the Museum collection and compared it with brown forms of *viridis* and find no appreciable difference not covered by variation. I have therefore included it as a synonym.

27. *STENOBOTHRUS CURTIPENNIS* Harris.

Locusta curtipennis HARRIS, Cat. Ins. Mass., 1835, p. 56.

One female at Montevista on August 13, one at Mancos on August 16, and one male and two female specimens from Cumbres on August 14. The females from Cumbres have the elytra very short, but little more than half as long as the abdomen.

28. *GOMPHOCERUS CLAVATUS* Thomas.

Gomphocerus clavatus THOMAS, Rept. U. S. Geol. Surv. Terr., V, 1873, p. 96.

Gomphocerus carpenteri THOMAS, Bull. U. S. Geol. Surv. Terr., I, No. 2, ser. 1874, p. 65.

Gomphocerus dypsodra SCUDDER, Daws., Rept. Geol., 49 Par., 1875, p. 344.

Fourteen males and 17 females from the following points in Colorado: Baileys June 30 and July 3; Morrison on June 20, at an elevation of about 7,000 feet; Boulder June 9; Rico August 16; Pine Grove July 18; Pikes Peak July 21; and at Chimney Gulch on July 21.

From a study of these specimens and a long series in the United States National Museum, it seems very clear that there is but one species. There is considerable variation among the different individuals, especially the males, but no characters present themselves that warrant the retention of more than one name. McNeill, in his revision of the Tryxaninae, recognizes two species and gives a table for their separation, using the character of the anterior tibiae being clavate and distinctly sulcate externally and size small, about 14 mm., to separate *clavatus* from *dypsodra*, which is described as having the fore tibiae but slightly and regularly expanded apically and size larger, about 18 mm. With these characters in mind I carefully examined the type material in the collection of the United States National Museum, which is composed wholly of male specimens. The type of *clavatus* is 16.5 mm. long and the anterior tibiae is moderately

expanded, not distinctly clavate, and is very distinctly sulcate externally, but this sulcation is quite obviously due to shrinkage as the left tibiae is more conspicuously sulcate than the right one. Such shrinkage is not remarkable as the specimen was alcoholic and described after drying. The describer gives the length as 0.56 inch in length, which is practically 14 mm. But, as above stated, the type really measures 16.5 mm. in length. Why Thomas gave this erroneous measurement is not clear, nor is it clear why McNeill used it as a synoptic character when he had the original type before him.

The type of *carpenterii*, which is an admitted synonym of *clavatus*, is 18 mm. in length, the fore tibiae strongly clavate and not at all sulcate externally. The type of *clepsydra* is not at present in the United States National Museum as mentioned by McNeill, nor is the original type a male from New Mexico, but females from farther north on the Souris River.

The range of variation presented by the types of *clavatus* and *carpenterii* more than covers all variation found among the specimens of *clepsydra*. Therefore if *clavatus* and *carpenterii* are synonymous, and I agree with McNeill in so considering them, *clepsydra* must also be a synonym. That this is a valid conclusion is pretty evident when a long series of specimens from different parts of the country and from various altitudes is examined. The anterior tibiae of the males vary considerably in the amount of apical expansion, though none examined are quite so conspicuously clavate as in the type of *carpenterii*. The elytra of the males are also variable, reaching quite to the tip of the abdomen in some specimens and in others falling noticeably short of it. The elytra of the females also vary in length, but never nearly reach the tip of the abdomen, generally only about as long as the pronotum.

29. BOOPEDON NUBILUM Say.

Gryllus nubilus SAY, Journ. Acad. Nat. Sci. Philad., IV, 1825, p. 308.

This species was found quite abundant in open woodlands in the vicinity of Victoria, Texas, during the latter part of June and in July. Only mature individuals were seen.

30. STIRAPLEURA DECUSSATA Scudder.

Stirapleura decussata SCUDDER, Ann. Rept. Chief Eng., 1876, p. 510.

Nine males, 15 females, Golden May 29; Sedalia June 15 and 21; Denver May 10 to July 16; Baileys July 13; Boulder June 9.

The foveolæ of this species, according to McNeill's tables in his revision of the Tryxalinae, are as long again as wide. Therefore these specimens could be called *delicatula* as justifiably as they are called *decussata* for the foveolæ are usually but little longer than wide. *Decussata* and *delicatula* may prove to be forms of one species.

31. *AGENEOTETTIX SCUDDERI* Bruner.

Aulocara scudderi BRUNER, Proc. U. S. Nat. Mus., XIII, 1890, pp. 63-64.

Sixteen males, twenty-eight females, Golden June 19 to July 27; Denver July 16; Fort Collins August 10; Cripple Creek July 26; Montrose August 17.

32. *AULOCARA ELLIOTTI* Thomas.

Stauronotus elliotti THOMAS, Proc. Acad. Nat. Sci. Philad., 1870, p. 82.

Sixty nine males, sixty females, Denver July 16; Morrison July 18; Fort Collins August 10; Golden June 19; Durango August 15; Glenwood Springs July 5; also two apparently full grown female nymphs at Golden on June 19.

This large series of fresh specimens shows a remarkable range of variation, both sexes varying greatly both in color and size. The females are more variable in color while the greatest variation in size occurs in the opposite sex. The posterior femora vary from 10 to 14 millimeters in the males and in the females the color ranges from reddish yellow to fuscous and the elytra of both sexes vary from almost immaculate to quite conspicuously spotted with black. Some of the rufous tinted females approach *parallelum* somewhat, inasmuch as the lateral carinae of the thorax do not seem quite so much constricted mesially as usual and the disk of the pronotum is unicolorous.

33. *AULOCARA FEMORATUM* Scudder.

Aulocara femoratum SCUDDER, Proc. Amer. Acad. Arts Sci., XXXV, 1899, pp. 54, 55-56.

Four males and eight females referable to this species were taken at Fort Collins on August 19 and one pair at Denver on July 11; the latter were taken *en copula*. They all agree in having the elytra much more abbreviated than in *elliotti* and the pronotum is more generally less angulate. The tegmina of the males are immaculate but those of the females are noticeably spotted with black, sometimes however quite dimly so.

SUBFAMILY CEDIPODINÆ.

34. *ARPHIA ARCTA* Scudder.

Arphia Arcta SCUDDER, Bull. U. S. Geol. Surv. Terr., 11, 1876, p. 263.

Arphia teporata SCUDDER, Ann. Rept. Chief Eng., 1876, p. 508.

Eleven males, seven females, Golden May 23; Pine Grove July 8 and 18; Baileys July 13; Platte Canyon May 10; Sedalia June 15; Denver May 10. Also collected at Williams, Arizona, on May 27, and June 9. The color of the hind tibial vary in color from clear yellow to blue.

I feel quite sure of the correctness of the above synonymy, and am inclined to believe that *A. frigida* is but a red-winged form of the same species. The type of *teporata* has yellow wings.

35. ARPHIA LUTEOLA Scudder.

Arphia luteola SCUDDER, Proc. Bost. Soc. Nat. Hist., XVII, 1875, p. 515.

Quite common in cotton fields about Victoria, Texas.

36. ARPHIA PSEUDONIETANA Thomas.

Tomonotus pseudonietana THOMAS, Proc. Acad. Nat. Sci. Philad., 1870, p. 82.

Oedipoda tenebrosa SCUDDER, Rept. U. S. Geol. Surv. Nebr., 1871, p. 251.

Tomonotus tenebrosa THOMAS, Rept. U. S. Geol. Surv. Terr., V, 1873, p. 107.

Arphia sanguinaria STÅL, Rec. Orth., I, 1873, p. 119.

Arphia oraticeps SAUSSURE, Add. Prodr. Oedip., 1888, pp. 165-166.

Sixteen males, nine females, Denver July 16; Golden June 19 to August 21; Fort Collins August 10.

From a study of this series of specimens and as many more in the collection of the U. S. National Museum I have decided upon the above synonymy, believing the changes warranted. That *oraticeps* is but a variety of *tenebrosa* is obvious to anyone who has seen this species in numbers, and that the name *pseudonietana* of Thomas was applied first to the species under consideration and should take precedence over *tenebrosa*, described a year later, also seems clear upon investigation of the original descriptions.

When in motion this is one of our most showy locusts, the bright red wings showing very conspicuously as the insect flies before the collector.

37. ARPHIA FRIGIDA Scudder.

Arphia frigida SCUDDER, Daws., Rep. geol. 49th par., 1875, p. 344.

Forty-one males, five females, Golden May 29 to June 17; Sedalia June 15; Denver May 10 to June 17; Platte Canyon May 10 to 17; Boulder May 22; Morrison June 29.

38. CHORTOPHAGA VIRIDIFASCIATA DeGeer.

Acyrdium viridifasciatum DEGEER, Mem., III, 1773, p. 498, pl. XLII, fig. 6.

Both green and brown forms of both sexes occurred quite commonly around Victoria, Texas, in June and July. From specimens observed at this place it would appear that brown individuals occur more often in the male than in the female sex. In Colorado twelve males and eighteen females were taken at Denver, Platte Canyon, and Golden. All these specimens were taken between May 10 and June 10 and were all of the brown form, except four females, and they were partially brown. Some variation exists in the amount of apical swelling of the male antennae.

39. ENCOPTOLOPHUS COSTALIS Scudder.

(*Edipoda costalis* SCUDDER, Bost. Journ. Nat. Hist., VII, 1862, p. 473.

Found in cotton fields at Victoria, Texas, in June and July; not numerous. Six males and two females were taken at Fort Collins on August 9, and two males and two females at Golden on August 21.

The males of this species bear quite a superficial resemblance to *Camnula pellucida*, but the reddish yellow tibiae of the latter will serve to readily separate them. The smaller size, low median carina and, especially in the male, the proportionately broader elytra separate *costalis* from *sordidus*.

40. CAMNULA PELLUCIDA Scudder.

(*Edipoda pellucida* SCUDDER, Bost. Journ. Nat. Hist., VII, 1862, p. 472.

Sixty-eight males, forty-six females, Cumbres August 14; Montrose August 16; Baileys July 13; Rico August 16; Pikes Peak July 21; Cripple Creek July 26; Chama, New Mexico August 14; Pine Grove July 18.

This is a common insect throughout the elevated regions of Colorado.

41. HIPPISCUS MONTANUS Thomas.

(*Edipoda montanus* THOMAS, Ann. Rept. U. S. Geol. Surv. Terr., V, 1872, p. 462.

Three males, two females, Denver May 10. Identified by Professor Bruner. Except for the obscured markings this species is very similar to *H. zapotecus*.

42. HIPPISCUS NEGLECTUS Thomas.

(*Edipoda neglectus* THOMAS, Proc. Acad. Nat. Sc. Philad., 1870, pp. 81-82.

Nineteen males, seven females, Baileys July 13; Chama, New Mexico August 14; Pine Grove July 8; Morrison June 29; Platte Canyon May 25; Chimney Gulch July 27; Pikes Peak July 21.

Three of the males, one from Pikes Peak and two from Baileys, have the posterior tibiae pale yellowish with scarcely a trace of red.

43. HIPPISCUS SAUSSUREI Scudder.

Hippiscus saussurei SCUDDER, Psyche, VI, 1892, pp. 268, 302.

One female specimen at Victoria, Texas, in June.

44. HIPPISCUS TUBERCULATUS Palisot de Beauvois.

Aceridium tuberculatum PALISOT DE BEAUVOIS, Ins. Afr. Amer., 1817, p. 145, pl. IV, fig. i.

One female at Sedalia on June 15.

45. HIPPISCUS ZAPOTECUS Saussure.

Xanthippus zapotecus SAUSSURE, Prodr. (Edip., 1884, p. 91.

Four males, three females, Denver May 10 to June 17. Professor Bruner is the authority for this determination.

46. LEPRUS CYANEUS Cockerell.

Leprus cyaneus COCKERELL, Ent. News, XIII, 1902, p. 305.

Seven males, one female, Salida August 2-9.

The wings of *L. wheeleri* are a bright yellow, as plainly shown by the types. Therefore, the reference of blue-winged specimens to that species, as has so often been done, is erroneous. *L. cyaneus* is a good species.

47. DISSOSTEIRA CAROLINA Linnæus.

Gryllus (Locusta) carolina LINNÆUS, Syst. Nat., 10th ed., 1, 1758, p. 433.

Common throughout Colorado, specimens being taken on both sides of the mountains from Denver to Grand Junction.

48. DISSOSTEIRA LONGIPENNIS Thomas.

Edipoda longipennis THOMAS, Ann. Rept. U. S. Geol. Surv. Terr., V, 1872, p. 463.

One male at Fort Collins August 9. A common species at times and is reported to come quite freely to light at night.

49. SPHARAGEMON ÆQUALE Say.

Gryllus æquale SAY, Journ. Acad. Nat. Sci. Philad., IV, 1825, p. 307.

Four males, three females, Denver July 16; Golden August 21; Fort Collins August 9. The specimens from Denver, two males, are not typical. They were identified by Prof. A. P. Morse. The median carina of the prothorax is somewhat elevated on the pronotum and scarcely at all on the metanotum, which is flat. The change from the elevated prozona to the scarcely carinate metazona is very abrupt. These specimens are also more slender than usual.

50. SPHARAGEMON ANGUSTIPENNE Morse.

Spharagemon angustipenne MORSE, Psyche, VII, 1895, pp. 295, 298.

One female from Denver on July 16.

51. SPHARAGEMON COLLARE Scudder.

Edipoda collare SCUDDER, Rept. U. S. Geol. Surv., Nebr., 1871, p. 250.

Two females from Golden on June 1.

52. SPHARAGEMON CRISTATUM Scudder.

Spharagemon cristatum SCUDDER, Proc. Bost. Soc. Nat. Hist., XVII, 1875, p. 470.

Several specimens at Victoria, Tex., in June and July.

53. SPHARAGEMON HUMILE Morse.

Spharagemon humile MORSE, Psyche, VII, 1895, p. 292.

Two males, one female, Golden June 18 and August 21.

54. SPHARAGEMON WYOMINGIANUM Thomas.

Edipodu wyomingianum THOMAS, Ann. Rept. U. S. Geol. Surv. Terr., V, 1872, p. 462.

Three males, Fort Collins August 10; Golden June 18.

55. DEROTMEMA CUPIDINEUM Scudder.

Derotmemma cupidineum SCUDDER, Ann. Rept. Chief Eng., 1876, p. 513.

Five males, six females, Montrose August 17; Grand Junction August 17; Palisades July 8.

Not so common as *D. haydeni*, from which it may be separated by the narrower fuscous bands of the wings.

56. DEROTMEMA HAYDENI Thomas.

Edipodu haydeni THOMAS, Rept. U. S. Geol. Surv. Terr., V, 1871, p. 460.

Thirty-three males, twenty-seven females, Salida August 2 to 6; Montrose August 17; Durango August 15; Denver July 16; Fort Collins August 10; Golden June 19 to August 21; Montevista August 13.

Both red and yellow winged specimens, male and female, were taken. This species is very common in most localities throughout the State. Individuals with yellow wings were the more numerous.

57. MESTOBREGMA BOREALE Saussure.

Psinidia (Trachyrachis) boreale SAUSSURE, Prodr. (Edip.), 1884, p. 164.

One female, Golden June 5.

The conspicuous character of this species is the unusually rugose pronotum. The top of the head is marked with several tortuous carinae and the frontal costa is traversed by a carina just below the ocellus. The wings are yellow at the base and the tip is hyaline; transverse black band a fourth as wide as the length of the wing with the costal shoot extending three-fourths of the way to the base; elytra regularly mottled with quite large fuscous spots. The posterior tibiae are yellow.

58. MESTOBREGMA FUSCIFRONS Stål.

Psinidia fuscifrons STÅL, Rec. Orth., I, 1873, p. 134.

Specimens of this species were collected in cotton fields at Victoria, Texas, in June.

59. MESTOBREGMA KIOWA Thomas.

Edipoda kiowa THOMAS, Ann. Rept. U. S. Geol. Surv. Terr., V, 1872, p. 461.

Specimens, both mature and immature, were taken on the summit of Pikes Peak on snow fields, and a number of mature individuals of both sexes were taken at the following places in Colorado and New Mexico: Montevista August 13; Chama, New Mexico August 14; Fort Collins August 9; Denver July 16; Golden June 19; Morrison June 23.

But one specimen, a female, was taken at Montevista, and its wings are pale citron basally. The same is true of four males from Chama, New Mexico, but all the others have the base of the wings hyaline. This appears to be quite constantly the case with specimens from opposite sides of the divide.

60. MESTOBREGMA PLATTEI Thomas.

Edipoda plattei THOMAS, Rept. U. S. Geol. Surv. Terr., V, 1873, p. 123.

Seven males, seventeen females, Denver July 26; Chimney Gulch July 27; Pine Grove July 23; Golden June 6 and August 21.

The distinguishing feature of this species seems to be the pallid coloring of the inferior posterior part of the lateral lobes of the thorax and the bands of the tegmina extending only across the costal half. The elytral markings resemble those of *Trimerotropis pseudofasciatus*.

61. MESTOBREGMA PULCHELLA Bruner.

Mestobregma pulchellum BRUNER, Proc. U. S. Nat. Mus., XII, 1890, p. 64-65.

One male at Fort Collins August 9. This specimen agrees in every particular with Bruner's type in the U. S. National Museum. This species was omitted from Scudder's catalogue. It is a true *Mestobregma*, and is very closely allied to *M. kiowa* in markings, and may prove to be a synonym of that species. The color is its most distinguishing feature, and that may be due to environment. The food plant from which it was described, *Eurotia lunata*, is recorded as occurring from the "Northwest Territories to western Nebraska, New Mexico, Nevada, and California."

62. METATOR PARDALINUM Saussure.

Edipoda pardalinum SAUSSURE, Rev. Mag. Zool., XIII, 1861, p. 324.

Nineteen males, twelve females, Fort Collins August 11; Morrison June 29; Golden June 19 and 30.

Nine males and six females having the base of the wings yellow, but in every other particular like the red-winged specimens, were taken at the same localities and on the same dates. Very probably these yellow-winged forms are the *Mestobregma maculosum* of Saussure.

63. PSINIDIA SULCIFRONS var.—AMPLICORNUS, new variety.

(Plate LV, fig. 2.)

Superficially resembling *P. sulcifrons*, but differing from typical specimens in several particulars. Color grayish mottled with fuscous; head as in *sulfifrons*; the antennæ are fuscous and greatly depressed in both sexes, and nearly twice as broad as those of typical *sulfifrons*; pronotum and elytra about as in *sulfifrons*, except that the posterior margin of the pronotum of the female is apparently more sharply angulate. Wings with the black band usually somewhat wider than in *sulfifrons*, leaving slightly less of the tip free, the tip infuscated, more so in the male. Posterior femora slender and more flattened, the dorsal carina much more elevated and thinner than in typical *sulfifrons*; the posterior tibiæ are quite uniformly blue, paling somewhat basally, those of the female much lighter colored than those of the male. The color of the tibiæ may be expected to vary considerably in coloration when a number of specimens are examined. The size is about the same as that of *sulfifrons*, the measurements of the type specimens being as follows:

Length of body, male, 21 mm., female, 28; antennæ, male, 12 mm., female, 13 mm.; elytra, male, 19 mm., female, 24 mm.; posterior femora, male, 13 mm., female 16 mm.

One male, one female, Victoria, Texas, June, 1902.

Type No. 6602, U.S.N.M.

64. CONOZOA WALLULA Scudder.

Psinidia wallula SCUDDER, Rept. U. S. Ent. Comm., II, app., 1881, pp. 27-28, pl. xvii, figs. 13, 14.

Thirteen males, four females, Grand Junction July 7 and August 17; Montrose August 17.

65. TRIMEROTROPIS BRUNERI McNeill.

Hadrotettix gracilis SCUDDER, Psyche, IX, 1900, pp. 67-68.

Trimerotropis bruneri McNEILL, Psyche, IX, 1900, p. 31.—SCUDDER, Proc. Davenp. Acad. Nat. Sc., IX, 1902, p. 37.

Two females, Sedalia July 11.

66. TRIMEROTROPIS CITRINA Scudder.

Trimerotropis citrina SCUDDER, Bull. U. S. Geol. Surv. Terr., II, 1876, p. 265.

This species has been taken at various places in Colorado. One male specimen taken at Golden has the black band on the wing somewhat broader than usual.

67. TRIMEROTROPIS GRACILIS Thomas.

Oedipoda gracilis THOMAS, Ann. Rept. U. S. Geol. Surv. Terr., V, 1871, p. 461.
Derotmema lichenosum SCUDDER, Proc. Amer. Acad. Arts Sci., XXXV, 1900, pp. 394-395.

Eight males, four females, Durango August 15.

The color of this insect makes it almost invisible when at rest on the naked ground.

68. TRIMEROTROPIS LATICINCTA Saussure.

Trimerotropis laticincta SAUSSURE, Prodr. Oedip., 1884, pp. 169, 170.

Two males, three females, Fort Collins August 19; one male, two females, Montrose August 13; one male, Grand Junction August 17; two females, Denver July 16; one female, Baileys July 30; two males, Golden August 21.

The males are somewhat variable in size, the measurements of the elytra ranging from 24 to 29 mm. It was quite unexpected to find this species so common and widely distributed. By the table given by McNeill these specimens run very persistently to this species.

69. TRIMEROTROPIS MODESTA Bruner.

Trimerotropis modesta BRUNER, Proc. U. S. Nat. Mus., XII, 1890, p. 72.

Six males, two females, Durango August 13; and Golden July 27.

The type of this species has the elytral bands quite distinct, decidedly more so than the greater number of specimens. At Golden it occurred up in the gulch in the foothill fauna. This is the first record of its occurrence east of the Rocky Mountains.

70. TRIMEROTROPIS MONTICOLA Saussure.

Trimerotropis monticola SAUSSURE, Prodr. Oedip., 1884, p. 170.

Seven males, five females, Cripple Creek July 26; Baileys July 13; Golden June 17 and July 27; Pikes Peak July 21; Denver July 22.

One of the females from Baileys has the black transverse band of the wing scarcely one-sixth as broad as the length of the wing and interrupted along the first anal vein. This specimen is also smaller than usual, the elytra measuring 25 mm. and the posterior femora 12 mm. All the specimens are from the foothill fauna except those from Denver. These Denver specimens, however, agree perfectly with specimens from Pikes Peak and other high altitudes.

71. TRIMEROTROPIS PSEUDOFASCIATA Scudder.

Trimerotropis pseudofasciata SCUDDER, Ann. Rept. Chief Eng., 1876, p. 514.

Eight males, four females, Chimney Gulch July 27; Pine Grove July 23; Salida August 1; Durango August 15.

The posterior tibiae of this species vary in color from yellow to distinctly blue. The type, according to McNeill, should be in the collection of the National Museum but can not now be found.

72. *TRIMEROTROPIS SIMILIS* Scudder.

Trimerotropis similis SCUDDER, Rept. U. S. Ent. Comm., 11, app., 1881, p. 27.

Ten males, three females, Platte Canyon May 23; Pine Grove July 8; Palisades July 8; Salida August 6; Golden July 11; Chimney Gulch July 27; Morrison June 27.

All these specimens were taken in the foothill fauna, and they do not seem to occur on the prairie. There is some variation in the elytral bands, some specimens having them much more contrasted than others.

73. *TRIMEROTROPIS VINCULATA* Scudder.

Trimerotropis vinculata SCUDDER, Proc. Bost. Soc. Nat. Hist., XVIII, 1876, p. 270.

Twenty males, fifteen females, Platte Canyon May 25 and July 10; Sedalia July 11; Montrose August 17; Montevista August 13; Salida August 6; Palisades July 8; Delta July 9; Fort Collins August 9; Denver June 21; and Grand Junction July 7.

74. *CIRCOTETTIX AZURESCENS* Bruner.

Trimerotropis azurescens BRUNER, Proc. U. S. Nat. Mus., XII, 1890, pp. 69-70.

Trimerotropis perpleca BRUNER, Proc. U. S. Nat. Mus., XII, 1890, pp. 74-75.

One male, Montrose August 17; one female, Fort Collins August 10. This is a true circotettix, the radials of the wings being distinctly swollen. The above synonymy is based upon a study of type specimens.

75. *CIRCOTETTIX CARLINIANUS* Thomas.

Edipoda carlinianus THOMAS, Proc. Acad. Nat. Sci. Philad., 1870, p. 81.

Six males, eight females, Fort Collins August 10; one male, Morrison June 29.

One of the male specimens has the hyaline portion of the wings extending quite to the base in the anterior and middle fields.

76. *CIRCOTETTIX SUFFUSUS* Scudder.

Trimerotropis suffusus SCUDDER, Bull. U. S. Geol. Surv. Terr., 11, 1876, p. 265.

Trimerotropis columbia SCUDDER, Rept. Ent. Soc. Ont., XXI, 1893, p. 77.

Three males, one female, Chama, New Mexico August 14.

77. *CIRCOTETTIX UNDULATUS* Thomas.

Edipoda undulatus THOMAS, Ann. Rept. U. S. Geol. Surv. Terr., V, 1871, p. 460.

Twenty-six males, twenty females, Chimney Gulch June 19; Baileys July 13; Pine Grove July 18 and 27; Golden, in foothills, July 27;

Chama, New Mexico August 14; Rico August 16; Cumbres August 14; Durango August 15; Pikes Peak July 21; Cripple Creek July 26.

This common species is one of the noisiest insects that inhabit the canyons.

78. *CIRCOTETTIX VERRUCULATUS* Kirby.

Locusta verruculatus Kirby, Faun. Bor. Amer., IV, 1837, p. 250.

Eight males, one female, Pine Grove July 16 and 23; Platte Canyon May 25.

This is even a more noisy species than *C. undulatus*. They fly during the hottest part of the day and the sharp crackling noise made by their wings may be heard for long distances. On quiet days I have distinctly heard them for almost or quite half a mile. Often they will remain suspended almost stationary in the air, making the welkin ring with their shrill crackling.

79. *HADROTETTIX TRIFASCIATUS* Say.

Cryllus trifasciatus Say, Amer. Ent., III, 1828, p. 78, pl. xxxiv.

One female at Victoria, Texas on July 10, and many specimens of both sexes, both mature and immature, in Colorado at Denver, Golden, and Fort Collins from June 7 to August 10.

This is apparently not a common insect in southern Texas, though farther north it is very common, as indicated by the above records. At Victoria I saw but the one specimen and no nymphs.

80. *HELIASTUS GUANIERI*, new species.

(Plate LV, fig. 3.)

Of small size, pale testaceous, scarcely paler below. Head prominent, nearly smooth, face almost perpendicular; eyes small, subglobular, about half as long as the infraocular part of the genæ; antennæ long, about four-fifths as long as the posterior femora, fine and filiform in the female, coarser and slightly flattened apically in the male. Pronotum constricted mesially, flaring both in front and behind, anterior margin slightly rounded, mesially subimmarginate, posterior margin obtuse-angularly rounded; median carinæ almost obsolete except on the metanotum where it is present as a fine raised line; lateral carinæ present only posterior of the typical sulcus and there very rounded; descending lobes of the pronotum apically subtruncate, in no wise descending below the free pleural lobes anterior to them. The tegmina extend to or slightly beyond the tips of the hind femora and are quite broad, about one-fifth as broad as long, the tips well rounded and the anterior and posterior margins about equally rounded, uniformly pale testaceous or with more or less maculation, along the posterior margin generally with separate and distinct fuscous spots. Intercalary vein absent. Wings hyaline, veins greenish. Fore and

middle legs more or less distinctly banded with black, posterior femora pale testaceous, paler below and on the inner side, dorsally and on the upper part of the outer face marked by two oblique dark bands, one median and one subapical; hind tibiae red, paling somewhat on the basal fourth; spines red at the base, the apical half black.

Length of body, male, 14 mm.; female, 19–20 mm.; antennae, male, 7.5 mm.; female, 8 mm.; elytra, male, 11 mm.; female, 15–16 mm.; hind femora, male, 9 mm.; female, 9.5–10 mm.

Type.—No. 6600, U.S.N.M. Described from specimens from Colorado collected by G. Guenier at Pueblo many years ago. I collected one specimen, a female, at Fort Collins, on August 11, and the U. S. National Museum contains specimens from Douglas County, Kansas, and others labeled "Colorado."

This species is probably the nearest allied to *Heliastus minimus*, but the long antennae and the red hind tibiae, together with the habitat, will serve to separate them.

Regarding the posterior tibiae of *H. minimus*, Professor Morse writes me as follows: "Hind tibiae of *Heliastus minimus* are luteous—pale yellowish buff—probably almost ivory white in life."

81. BRACHYSTOLA MAGNA Girard.

Brachypeplus magnus GIRARD, Marcy, Expl. Red River, 1853, p. 260, pl. xv, figs. 1–4.

Several specimens, mature and immature, at Golden, on poppy plants in July. *Brachypeplus virescens* Charpentier is very probably a synonym of this species. If such should prove the case, the name *virescens* would have preference, being established several years previous to *magna*.

Subfamily ACRIDIINÆ.

82. TÆNIOPODA PECTICORNIS Walker.

Rhomalea pecticornis WALKER, Cat. Derm. Salt., III, 1870, p. 538.

Tæniopoda pecticornis STÅL, Rec. Orth., I, 1873, p. 51.—THOMAS, Rept. U. S. Geol. Surv. west 100 merid., V, 1875, p. 898.—SCUDDER and COCKERELL, Proc. Davenport Acad. Sci., IX, 1902, p. 39.

Specimens of this fine insect were sent to the Division of Entomology by Mr. E. Meyenberg, of Pecos, Texas, with the statement that they were taken at the base of the foothills of the Guadalupe Mountains. This species does not appear in Scudder's catalogue.

83. DICTYOPHORUS RETICULATUS Thunberg.

Dictyophorus reticulatus THUNBERG, Mem. Acad. St. Petersburg., V, 1815, p. 259.

This handsome insect is quite common in some cotton fields about Victoria, Texas, where it matures about the end of June. The con-

spicuously marked nymphs are no less striking in appearance than the mature individuals, in fact being easier seen at a distance than the imagoes.

An apparently unrecorded fact regarding this species was noted in the field. Both sexes, but especially the males, when disturbed make a distinct simmering or bubbling sound, high-noted, but of small volume. Upon investigation, this sound was found to proceed from a gland, probably a modified spiracle, opening from the side of the body above and slightly behind the middle coxæ. The sound is produced by the insects forcing out very minute bubbles of a clear liquid, causing a sound sufficiently loud to be heard for some distance. Whether this liquid has repelling properties and the resulting sound purely mechanical, or whether the production of sound is the main object of the mechanism, was not determined.

84. SCHISTOCERCA ALUTACEA Harris.

Aceridium alutacea HARRIS, Ins. Inj. Veg., 1841, p. 139.

One female specimen at Grand Junction August 17, and one male by Ostar, labeled "Colorado."

85. SCHISTOCERCA AMERICANA Drury.

Gryllus americana DRURY, Ill. Nat. Hist., I, 1770, p. 128, pl. XLIX, fig. 2.

This species is quite common at times in the cotton fields of Texas. Several specimens were taken at Victoria in June and July.

86. SCHISTOCERCA OBSCURA Fabricius.

Gryllus obscura FABRICIUS, Suppl. Ent. Syst., 1798, p. 194.

One large female from Quero, Texas July 11.

87. SCHISTOCERCA SHOSHONE Thomas.

Aceridium shoshone THOMAS, Proc. Acad. Nat. Sci. Philad., 1873, p. 165.

Two large females from Yuma, Arizona, and one male from Phoenix, Arizona. Immersion in alcohol seems to discolor these insects to a considerable extent, changing the green to light brown and the color of hind tibiæ from red to yellow.

88. PARAIDEMONA MIMICA Scudder.

Paraidemona mimica SCUDDER, Proc. U. S. Nat. Mus., XX, 1897, pp. 42, 43-44, pl. III, fig. 10.

Many specimens of both sexes in cotton fields in the vicinity of Victoria, Texas, in June and July. This seems to be the common species in that section of the State, no other species being represented among the many specimens examined. It is quite variable, both in size and coloration.

89. *HYPOCHLORA ALBA* Dodge.

Pezotettix alba DODGE, Can. Ent., VIII, 1876 p. 10.

Two males and three females at Fort Collins August 9, and one female at Boulder on August 13.

90. *HESPEROTETTIX PRATENSIS* Scudder.

Hesperotettix pratensis SCUDDER, Proc. U. S. Nat. Mus., XX, 1897, pp. 57, 64-66, pl. v, fig. 3.

Four males, two females, Pine Grove July 18, and Grand Junction July 7.

91. *HESPEROTETTIX SPECIOSUS* Scudder.

Pezotettix speciosus SCUDDER, Rept. U. S. Geol. Surv. Nebr., 1871, p. 250.

Found quite common in long grass in southern Texas in June and July. It apparently matures in that section about the end of June. A number of specimens were taken in cotton fields.

92. *HESPEROTETTIX VIRIDIS* Thomas.

Caloptenus viridis THOMAS, Ann. Rept. U. S. Geol. Surv. Terr., V., 1872, p. 450, pl. II, fig. 3.

Ten males, nineteen females, Pikes Peak July 21; Golden June 19 to August 21; Fort Collins August 11; Denver July 16.

Males of this species are quite variable in size.

92. *ÆOLOPLUS CHENOPODII* Bruner.

Pezotettix chenopodii BRUNER, Ins. Life, VII, 1894, pp. 41-42.

Numerous specimens of this interesting species were taken at Palisade July 8 in a patch of low prickly shrubs just across the railroad from the station, which I suppose is the Chenipodaceous plant on which the species was originally recorded as feeding. Specimens were also taken at Grand Junction and Delta. They were seen mating at the latter place on August 17, and on the latter date some apparently full grown nymphs were taken. These nymphs were uniformly light yellowish in color and the thorax more tectiform than in mature individuals. Among the mature specimens taken were some individuals almost unicolorous, without fuscous markings.

94. *ÆOLOPLUS PLAGOSUS* Scudder.

Pezotettix plagosus SCUDDER, Ann. Rept. Chief Eng., 1876, p. 504.

Numerous specimens from the side of Tenderfoot Mountain, just across the railroad from the station at Salida from August 1 to 7. They were very common and frequently found mating. One female specimen was also taken at Sedalia and the color of that specimen is of

a decidedly yellowish cast, radically different from the dark-brown color that characterized all the *Salida* specimens except one which was colored similar to the *Sedalia* specimen.

95. *ÆOLOPLUS REGALIS* Dodge.

Caloptenus regalis DODGE, Can. Ent., VIII, 1876, pp. 11, 12.

Four males, four females, Fort Collins August 10.

Some specimens have the elytra greenish, but generally they are brownish. One pair was taken mated.

96. *ÆOLOPLUS TURNBULLI* Thomas.

Caloptenus turnbulli THOMAS, Ann. Rept. U. S. Geol. Surv. Terr., V., 1872, p. 452, pl. II, fig. 10.

One male, one female, Delta July 13.

These specimens are unusually brachypterous, the elytra covering but little more than half of the abdomen. The female is also smaller than usual, but otherwise both specimens are typical. The posterior tibiae are variable in color, those of the female greenish yellow with a pallid subbasal annulus, while those of the male are testaceous merging into pale reddish on the basal third. The measurements of these two specimens are as follows:

Length of body, male and female, 16 mm.; antennæ, male, 5 mm.; female, 4 mm.; pronotum, male and female, 3.5 mm.; elytra, male and female, 7 mm.; posterior femora, male, 7.5 mm.; female, 8 mm.

97. *MELANOPLUS ALTITUDINUM* Scudder.

Pezotettix altitudinum SCUDDER, Proc. Bost. Soc. Nat. Hist., XX, 1879, p. 86.

Melanoplus huroni BLATCHLEY, Psyche, VIII, 1898, pp. 195, 196.

Seven males, eight females, Pine Grove July 18, at the head of a side gulch nearly a thousand feet above the town. Also one pair from Pikes Peak July 21, one female above Boulder June 9, and one male above Golden June 17.

The elytra of these specimens are somewhat variable in length, in the male sex varying from 4.75 to 6 mm. There are several specimens of this species in the United States National Museum named by Dr. Scudder, and the male tegmina vary from 5.5 to 9.5 mm. and the female tegmina vary from 7.5 to 11 mm. in length. But these higher measurements seem exceptional, the usual length of elytra being about 6 mm. in the males and 7 mm. in the females. Types of *Melanoplus huroni* Blatchley are in the National Museum and seem to be identical with specimens of *altitudinum* from various localities in the West. It is not clear why Dr. Scudder placed this species in the *Borekii* series of the genus, as it surely does not belong there.

98. MELANOPLUS ATLANIS Riley.

Caloptenus atlantis RILEY, Ann. Rept. Ins. Mo., VII, 1875, p. 169.

This species was taken at various points in Colorado on both sides of the divide. Specimens were also taken on the summit of Pikes Peak on snow fields on July 20. The color of the posterior tibiae vary from bright red to yellow and blue.

99. MELANOPLUS BIVITTATUS Say.

Gryllus bivittatus SAY, Journ. Acad. Nat. Sci. Philad., IV, 1825, p. 308.

Six males, twelve females, Denver July 16; Golden June 19 and August 21; Fort Collins August 10.

A pair from Fort Collins is brachypterous, the wings covering but little more than half of the abdomen. The male is quite small, measuring as follows:

Length, 22 mm.; elytra, 9 mm.; hind femora, 12 mm.

100. MELANOPLUS BOWDITCHI Scudder.

Melanoplus bowditchi SCUDDER, Proc. Bost. Soc. Nat. Hist., XX, 1879, p. 72.

Two males, six females, Fort Collins August 9; Salida August 6; also one male from Williams, Arizona. The Colorado specimens have the male furcula shaped considerably like those of *M. pictus* as illustrated on Plate XI of Scudder's Revision of the Melanopli. The specimen from Arizona has these organs more rounded out on the inner side than usual. Some specimens from Salida are in the collection of the Colorado Agricultural College labeled "bowditchi or n. sp."

101. MELANOPLUS COCCINEIPES Scudder.

Melanoplus coccineipes SCUDDER, Proc. Amer. Phil. Soc., XXXVI, 1897, pp. 26, 34.

Thirteen males and eleven females from Golden, Denver, and Fort Collins from July 11 to August 23.

102. MELANOPLUS COLLINUS Scudder.

Melanoplus collinus SCUDDER, Proc. Bost. Soc. Nat. Hist., XIX, 1878, p. 285.

One male specimen taken at Fort Collins August 10. This specimen is indistinguishable from specimens from Virginia and Canada. It has not, I believe, been recorded from Colorado before.

103. MELANOPLUS COLORADUS, new species.

(Plate LV, Figs. 1, 1^a.)

One male specimen from Palisade July 8.

Of medium size, testaceous, very closely related to *M. propinquus* in general appearance. Head quite prominent, flavo-testaceous, darker

above with a scarcely discernible trace of a postocular band, though with more specimens there would probably be some variation in this respect. The vertex is tumid and slightly elevated above the thorax; interspace between the eyes about as broad as the basal segment of the antennæ; frontal costa subequal, flat, biserially punctate above the ocellus, below shallowly sulcate, just failing to reach the clypeus; eyes moderately prominent, a little longer than the infraocular part of the gena; antennæ flavo-testaceous, about three-fourths as long as the posterior femora. Pronotum very slightly enlarging from in front backward, the curinæ as in *M. propinquus*; color testaceous with a black postocular band on the prozona, not extending onto the metazona; front margin truncate, scarcely at all flaring, hind margin obtusangulate. Prosternal spine and mesosternal foramine as in *propinquus*. Tegmina considerably passing the posterior femora, very slender in form and uniformly testaceous, immaculate. Fore and middle femora considerably swollen, hind femora very pale testaceous above, paler below, without bands, but with black genicular arcs. Posterior tibiæ uniformly red, spines wholly black, eleven in number in the outer series. Extremity of abdomen quite noticeably clavate, moderately recurved, the supraanal plate strongly depressed apically, almost hidden by the more than usual developed pallium, lateral margins moderately elevated, median sulcus moderately deep with narrow, elevated margins; furecula two-thirds as long as the supraanal plate, broad and touching at the base for a third of their length and quite thin, narrowing abruptly to half their basal width and continuing as cylindrical oval terminating fingers, slightly curving inward; cerci relatively broader than those of *propinquus*, tapering more on the upper side than on the lower and obliquely truncate apically, the upper edge of the apex bluntly acute; subgenital plate as in *propinquus*.

Length of body from head to tip of the abdomen, 21 mm., antennæ, 8 mm., elytra, 18 mm., hind femora, 12 mm.

Type.—No. 6599, U.S.N.M.

The broader cerci, pallid lower surface of the posterior femora, and the habitat will serve to separate this species from its nearest ally, *M. propinquus*. It belongs to the femur rubrum series.

104. MELANOPLUS DIFFERENTIALIS Thomas.

Acridium differentialis THOMAS, Trans. Ill. St. Agric. Soc., V, 1865, p. 450.

Many specimens at Victoria, Texas in June and July and on both sides of the divide in Colorado. At Grand Junction I took a number of fine large specimens of both sexes on August 17 that were uniformly brownish in color and very large. In Texas they were very numerous along roadsides in rank weeds, flying up in swarms at the approach of the buggy. In the streets of Denver black individuals were taken on several occasions.

105. MELANOPLUS FASCIATUS Walker.

Cadoptenus fasciatus WALKER, Cat. Derm. Salt., IV, 1870, p. 680.

Two males at Pine Grove on July 18.

106. MELANOPLUS FEMUR-RUBRUM De Geer.

Aceridium femur-rubrum DE GEER, Mem., III, 1773, p. 498, pl. XLII, fig 5.

Two males, twenty-seven females, Montevista August 13; Golden August 23; Fort Collins August 10; Denver July 16; Montrose August 13; Glenwood Springs August 18; Grand Junction August 17; Palisade July 8; Mancos August 16.

107. MELANOPLUS FLABELLATUS Scudder.

Melanoplus flabellatus SCUDDER, Proc. Bost. Soc. Nat. Hist., XX, 1879, pp. 82-83.

This species was found mating in considerable numbers in the edge of an open piece of woods near Victoria, Texas on June 28.

108. MELANOPLUS FLAVIDUS Scudder.

Melanoplus flavidus SCUDDER, Proc. Bost. Soc. Nat. Hist., XX, 1879, p. 74.

Nine males, thirteen females, Golden June 19 and August 21; Fort Collins August 11.

Some of these specimens are quite brightly yellowish and others are quite uniformly brown, except the posterior tibiae. Some specimens have the lateral lobes of the pronotum with a black postocular band and some are unicolorous. All have the hind femora bifasciate with fuscous above.

109. MELANOPLUS GLADSTONI Scudder.

Melanoplus gladstoni SCUDDER, Proc. Amer. Phil. Soc., XXXVI, 1897, pp. 23, 33.

Eleven males, ten females, Golden August 21; Fort Collins August 9.

The specimens from Colorado and Nebraska mentioned by Scudder on page 230 of his revision of the *Melanopli* agree exactly with this lot from Colorado, otherwise these would have been treated of here as *conspersus*, for *gladstoni* and that species must be very similar, in fact, Colorado specimens in the collection of the Colorado Agricultural College are labeled as *conspersus*. The cerci of some of the specimens, both of the present lot from Colorado and those mentioned above from Nebraska, are apically bent inward at almost a right angle. It may be that they are the true *conspersus*, and *gladstoni* occurs only further north. Or, still more likely, *gladstoni* and *conspersus* are forms of one variable species. To settle this the type of *conspersus*, or typical examples, must be seen.

110. MELANOPLUS INFANTILIS Scudder.

Melanoplus infantilis SCUDDER, Proc. Bost. Soc. Nat. Hist., XX, 1879, pp. 65-67.

Ten males, eight females, Baileys July 13; Cripple Creek July 26; Fort Collins August 10; Morrison June 27; Denver July 16.

111. MELANOPLUS INTERMEDIUS Scudder.

Melanoplus intermedius SCUDDER, Proc. Amer. Phil. Soc., XXXVI, 1897, pp. 20, 32.

Twenty males, nineteen females, Montrose August 17; Glenwood Springs August 18.

112. MELANOPLUS LAKINUS Scudder.

Pezotettix lakinus SCUDDER, Proc. Bost. Soc. Nat. Hist., XX, 1879, pp. 79-80.

Six males, four females, Fort Collins, August 9. One pair mating.

113. MELANOPLUS LATIFERCULA, new species.

(Plate LV, fig. 4, 4a.)

One male from Cumbres, Colorado, August 14.

A brachypterous species of small size and very dark fuscous in color; head moderately prominent, dark fuscous above and on the upper portion of the genæ, elsewhere dark ashen except for a broad piceous postocular band; vertex elevated considerably above the pronotum, somewhat tumid; interspace between the eyes noticeably broader than the basal segment of the antennæ; frontal costa but slightly broader than the space between the eyes, with the margins parallel and punctate throughout, very shallowly sulcate at and below the ocellus, just failing to reach the clypeus; eyes neither large nor prominent, a little longer than the infraocular part of the genæ. Antennæ fuscous, two-thirds as long as the posterior femora. Pronotum subequal, very slightly enlarging posteriorly, uniformly dark fuscous except for a broad, slightly broken, postocular stripe which does not extend on to the metanotum; the disk passes into the perpendicular lateral lobes with an abrupt turn, making the lateral carinæ well marked; front border truncate, in no wise flaring to receive the head; posterior border very obtusely angled, the angle rounded; prosternal spine short, erect, subquadrate, and bluntly rounded at the apex; interspace between the mesosternal lobes quadrate, metasternal lobes approximate. Tegmina abbreviate, but little longer than the pronotum, overlapping and apically pointed, immaculately fuscous; fore and middle femora quite strongly tumid, the anterior ones the more so; hind femora quite stout, dark fuscous except below where they are dark red, with darker geniculations preceded by a pallid band; spines black to the base, ten in number in the outer series. Tip of the abdomen scarcely clavate, considerably upturned, the supraanal plate apically

concealed by the ample pallium and with the sides partially hidden beneath the short broad infracereal plates which overlie the borders of the supraanal plate in this species; the median sulcus narrow with moderately elevated margins; furcula well developed, half as long as the supraanal plate and very broad, nearly half as broad as long, touching at the base and narrowed distally to a broadly rounded apex, the narrowing more on the inner side; cerci very broad, about twice as long as the basal width, tapering but little and that on the under side of the apical third, the tip broadly rounded, the whole gently upcurved but scarcely inclined inwards; subgenital plate black, the tip elevated a little above the lateral margins and narrowly and shallowly but distinctly notched.

Length of body, 16 mm.; antennae, 6.5 mm.; pronotum, 4 mm.; elytra, 5 mm.; hind femora, 9.5 mm.

Type.—No. 6601 U.S.N.M.

This species appears to belong to the *maeus* series.

114. MELANOPLUS MINOR Scudder.

Caloptenus minor SCUDDER, Proc. Bost. Soc. Nat. Hist., XVII, 1875, p. 478.

Sixteen males, sixteen females, Glenwood Springs July 5; Sedalia June 15 and 21; Denver July 16.

115. MELANOPLUS OCCIDENTALIS Thomas.

Caloptenus occidentalis THOMAS, Ann. Rept. U. S. Geol. Surv. Terr., V, 1872, p. 453, pl. II, fig. 2.

Seventy-four males, forty-nine females, Cripple Creek July 26; Morrison June 29; Golden June 19 and July 11; Boulder June 9; Durango June 12; Denver July 16; Pikes Peak July 21; Fort Collins August 10; Baileys July 30; Sedalia June 21; Glenwood Springs July 5.

Though the type of both this species and *M. cuneatus* are in the Museum collection I can find no stable character for separating them. The latter is the larger species, considering only the types, but with a series, such as the one now before me, that is seen to be inadequate for their separation. As for the tubercled subgenital plate of *occidentalis*, as given by Scudder for the separation of that species from *cuneatus*, I must confess an inability to make anything out of it. The cerci of *cuneatus* seem however to be shorter and inferiorly more lobed than in *occidentalis*.

The males of this species, as represented by this series, vary in measurements as follows:

Length of body, 19 to 23 mm.; elytra, 8.5 to 16 mm.; hind femora, 10 to 11 mm. The specimen from which the minimum measurement of the elytra was taken was collected at Glenwood Springs on July 5, and is an unique specimen of its kind so far as recorded, no other known individual having elytra less than 12 mm. in length.

116. MELANOPLUS PACKARDII Scudder.

Melanoplus packardii SCUDDER, Proc. Bost. Soc. Nat. Hist., XIX, 1878, p. 287.

One female specimen in cotton field at Victoria, Texas, in late June; apparently not very common. In Colorado specimens of both sexes were taken at the following places: Denver July 16; Golden August 21 and Morrison June 28.

117. MELANOPLUS PLUMBEUS Dodge

Caloptenus plumbeus DODGE, Can. Ent., IX, 1877, p. 12.

Seventeen males, nine females, Denver July 16.

The elytra of some specimens are almost fuscous and distinctly maculate, and the general color varies from fuscous to flavous. But the flavous stripe on a darker background is constant, and specimens of this species can be separated from *femur-rubrum* with considerable certainty by that character and the general appearance. But those two species are very close and may prove to be forms of the same thing.

118. PHOETALIOTES NEBRASCENSIS Thomas.

Pezotettix nebrascensis THOMAS, Ann. Rept. U. S. Geol. Surv. Terr., V, 1872, p. 455.

Seven males, six females, Fort Collins August 10. One pair is macropterous, but all the rest are brachypterous.

119. PAROXYA FLORIDANA Thomas.

Caloptenus floridana THOMAS, Bull. U. S. Geol. Surv. Terr., I, 1874, pp. 2, 68.

Two females, Victoria, Texas, in June, 1902. These specimens are typical in having the fuscous stripe of the lateral lobes of the pronotum abruptly terminated at the posterior sulcus. Specimens of this species taken in numbers at Rosslyn, Virginia, usually have this stripe percurrent, though behind the posterior sulcus it is not generally so well defined.

120. DACTYLOTUM PICTUM Thomas.

Pezotettix pictum THOMAS, Proc. Acad. Nat. Sci. Philad., 1870, p. 78.

A few specimens of both sexes, also nymphs, at Denver, July 26; Golden, July 27; and Fort Collins, August 10.

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121. ARETHÆA PHALANGIUM Scudder.

Egipan phalangium SCUDDER, Proc. Bost. Soc. Nat. Hist., XIX, 1877, p. 40.

Three females were taken in the vicinity of Victoria, Texas, in the latter part of June, 1902. They were all flying in open prairies, and other specimens were seen but not taken. They do not usually take long flights, generally no more than 50 or 100 yards. There is some variation in the radial branches of the elytra, the *multiramosa* of Brunner representing such variation.

122. *SCUDDERIA CURVICAUDA* De Geer.

Locusta curvicauda DE GEER, Mem., III, 1773, p. 446, pl. xxxviii, fig. 3.

One pair at Victoria, Texas, in June.

123. *SCUDDERIA FURCATA* Brunner.

Scudderia furcata BRUNNER, Monogr. Phaner., 1878, p. 239, pl. v, fig. 72a.

One mature female by E. J. Oslar, marked "Colorado," and one immature specimen which probably belongs to this species was taken at Golden on July 18.

124. *SCUDDERIA TEXENSIS* Saussure and Pictet.

Scudderia texensis SAUSSURE and PICTET, Biol. Cent.-Amer., Orth., 1897, I, pp. 328, 329, 330, pl. xv, figs. 18, 19.

One female at Victoria in June, 1902.

125. *AMBLYCORYPHA HUASTECA* Saussure.

Phylloptera huasteca SAUSSURE, Rev. Mag. Zool., XI, 1859, p. 205.

Quite common in lowlands in southern Texas. A number of specimens were taken near Victoria, and in early July I saw hundreds of them taking short flights over a piece of low prairie.

126. *AMBLYCORYPHA UHLERI* Stål.

Amblycorypha uhleri STÅL, Bih. Sv. Vet.-akad. handl., IV, 1876, No. 5, p. 57.

Several specimens at Victoria in June.

127. *MICROCENTRUM LAURIFOLIUM* Linnæus.

Gryllus (Tettigonia) laurifolium LINNÆUS, Syst. Nat., 10th ed., I, 1758, p. 429.

One male at Durango, by E. J. Oslar.

128. *CONOCEPHALUS ENSIGER* Harris.

Conocephalus ensiger HARRIS, Ins. Inj. Veg., 1841, p. 131.

Three males and two females, by E. J. Oslar, marked "Colorado." One of the specimens, a male, is brown, all the others green.

129. *CONOCEPHALUS TRIOPS* Linnæus.

Gryllus (Tettigonia) triops LINNÆUS, Syst. Nat., 10th ed., I, 1758, p. 430.

At Victoria, Texas, a mature male and an apparently half-grown nymph were taken on July 10 in grass near an old irrigating reservoir.

130. *ORCHELIMUM HERBACEUM* Serville.

Orchelimum herbaceum SERVILLE, Orth., 1839, p. 524.

Specimens of this species were taken in Texas, where it is not as common as the next species, with which it was found associated. Specimens were also taken in Colorado, by E. J. Oslar, but are without locality or date.

131. ORCHELIMUM LONGIPENNE Scudder.

Orchelimum longipenne SCUDDER, Bost. Journ. Nat. Hist., VII, 1862, p. 453.

Quite common in the vicinity of lakes or water courses in southern Texas. The species differ from *herbaceum* in having a slightly longer ovipositor, and the form is not nearly so slender, especially in the males. The presence or absence of a dorsal stripe on the pronotum is not a very stable character for the separation of species in this genus, as there is considerable variation in this respect.

132. XIPHIDIUM FASCIATUM De Geer.

Xiphidium fasciatum DE GEER, Mem., III, 1773, p. 458, pl. XI, fig. 4.

A common and widely spread species. It often comes to light, sometimes in considerable numbers. Many specimens of both sexes were taken at Victoria, Texas, in June and July, and one male specimen was taken at Montevista, Colorado, on August 13.

133. XIPHIDIUM SALTANS Scudder.

Xiphidium saltans SCUDDER, Rept. U. S. Geol. Surv. Nebr., 1871, p. 249.

One male and six females at Fort Collins, August 10, in rank grass.

134. XIPHIDIUM STRICTUM Scudder.

Xiphidium strictum SCUDDER, Proc. Bost. Soc. Nat. Hist., XVII, 1875, p. 460.

Several females were taken near Victoria, Texas in June, 1902. They were in reeds near a swamp and both mature and immature specimens were taken. No males were seen.

135. XIPHIDIUM VICINUM Morse.

Xiphidium vicinum MORSE, Can. Ent., XXXIII, 1901, p. 203.

Three males and two females of this species were taken at Fort Collins on August 10, in rank grass. The females and one of the males are of the form called *productum* by Professor Morse.

136. CAPNOBATES FULIGINOSUS Thomas.

Locusta fuliginosus THOMAS, Ann. Rept. U. S. Geol. Surv. Terr., V, 1872, p. 443, pl. I, fig. 9.

Two males at Bright Angel, Arizona on July 13, in the Colorado Canyon at an altitude of 3,000 feet. The spines on the outer inferior side of the fore femora of some specimens of this species are wholly wanting, their location being indicated by piceous spots.

137. ANABRUS COLORADUS Thomas.

Anabrus coloradus THOMAS, Ann. Rept. U. S. Geol. Surv. Terr., V, 1872, p. 440.

Six males, five females, Cumbres, August 14; Pikes Peak, July 21, and South Park, by Oslar.

At Cumbres the males were stridulating about 10 o'clock in the morning, and that led to their capture. They were in the grass and would never have been discovered but for their song. But even when once discovered their capture was not at all assured, for they blended in color with the grass so perfectly and were so active in eluding the grasp that many would escape when almost in the bottle.

138. *ANABRUS PURPURASCENS* Uhler.

Anabrus purpurascens UHLER, Proc. Ent. Soc. Philad., 11, 1864, p. 550.

One pair, Fort Collins, August 10, on the prairie out half a mile from the foothills. The males were stridulating.

139. *EREMOPEDES BALLI* Caudell.

Eremopedes balli CAUDELL, Can. Ent., XXXIV, 1902, p. 100.

Six males, three females, Fort Collins, August 19; five males and three females, Williams, Arizona, from June 6 to July 30, and one male at Flagstaff, Arizona, on July 4. The specimens from Williams were found under bark, quite a surprising fact considering the habitat of the type specimens. In the more immature specimens the lateral lobes are persistently striped with a longitudinal blackish stripe which extends across the thorax and nearly to the end of the abdomen. On the thorax the stripe is sharply defined above and fades out gradually below. At Williams they appear to mature about a month earlier than at Fort Collins, the mature specimens being taken at the former place on July 1. The mature individuals from Arizona have the posterior femora marked externally by two black stripes, as mentioned under the next species.

140. *EREMOPEDES UNICOLOR* Scudder.

Eremopedes unicolor SCUDDER, Proc. Davenport Acad. Nat. Sci., VIII, 1899, p. 97.

One female from Hot Springs, Arizona June 12. This specimen is somewhat larger than the type and the pronotum is somewhat infuscated, the infuscation confined to a little more than the anterior half and not reaching to the inferior margins of the lateral lobes, though there is a dash of black next the margin just above the sinus. The posterior femora have two longitudinal black streaks, converging somewhat posteriorly. The measurements are as follows:

Length of thorax, 8.5 mm.; fore femora, 9 mm.; hind femora, 26 mm.; ovipositor, 19 mm.

141. *PLAGIOSTIRA ALBONOTATA* Scudder.

Plagiostira albonotata SCUDDER, Ann. Rept. Chief Eng., 1876, p. 501.

One pair of this handsome insect was taken at Williams, Arizona, on July 24. They were found on sagebrush.

142. ATELOPLUS NOTATUS Scudder.

Ateplus notatus SCUDDER, Proc. Davenport Acad. Nat. Sci., VIII, 1899, p. 98.

One mature female and three nymphs at Hot Springs, Arizona July 13 to 22. The smallest nymphs were collected on the earlier date. The mature specimen agrees with the type specimen in the collection of the National Museum except that there is no dorsal stripe present.

143. CEUTHOPHILUS DEVIUS Scudder.

Ceuthophilus devius SCUDDER, Proc. Amer. Acad. Arts Sci., XXX, 1894, pp. 30, 99-100.

A mature individual was taken at Durango by Oslar.

144. CEUTHOPHILUS VALGUS Scudder.

Ceuthophilus valgus SCUDDER, Proc. Amer. Acad. Arts Sci., XXX, 1894, pp. 27, 74-75.

Several specimens of both sexes in South Park, by Oslar.

145. CEUTHOPHILUS VINCULATUS Scudder.

Ceuthophilus vinculatus SCUDDER, Proc. Amer. Acad. Arts Sci., XXX, 1894, pp. 29, 91-92.

Specimens of what I take to be the young of this species were taken at the head of Chimney Gulch, above Golden, May 13. They were found in an old decaying stump.

146. UDEOPSYLLA ROBUSTA Haldeman.

Phalangopsis robusta HALDEMAN, Proc. Amer. Assoc. Adv. Sci., II, 1850, p. 346.

One female by E. J. Oslar, marked "Colorado."

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147. MYRMECOPHILA NEBRASCENSIS Scudder.

Myrmecophila nebrascensis SCUDDER, Psyche, VIII, 1899, pp. 425, 427-428.

Several specimens of this species were taken at Williams, Arizona, on May 26 and June 3.

148. CYCLOPTILUS SQUAMOSUS Scudder.

Cycloptilus squamosus SCUDDER, Proc. Bost. Soc. Nat. Hist., XII, 1868, p. 142.

One female specimen on cotton at Victoria, Texas in late June.

149. NEMOBIUS FASCIATUS De Geer.

Gryllus fasciatus DE GEER, Mem., III, 1773, p. 522, pl. XLIII, fig. 5.

The macropterous form of this species occurred in large numbers at light in Victoria, Texas during the latter part of June, many hundreds being easily gathered in one evening from the various lights

scattered around through the town. But few brachypterous forms were seen at light. In Colorado but a single specimen of the macropterous form was seen, one by Osler without date or locality. Brachypterous specimens of both sexes were taken at Fort Collins on August 10.

150. *NEMOBIUS UTAHENSIS* Scudder.

Nemobius utahensis SCUDDER, Journ. N. Y. Ent. Soc., IV, 1896, pp. 99, 103-104.

One male of what is evidently this species was taken at Sedalia June 15, and a freshly matured one at Montevista August 13.

151. *GRYLLUS ABBREVIATUS* Serville.

Gryllus abbreviatus SERVILLE, Orth., 1839, p. 336.

One male referable to this species was taken at Fort Collins August 11, and one at Sedalia June 15. The one from Fort Collins was freshly matured when found. An immature female was also taken at Fort Collins August 10.

152. *GRYLLUS PENNSYLVANICUS* Burmeister.

Gryllus pennsylvanicus BURMEISTER, Handb. Ent., II, 1838, p. 734.

The nymphs of what is evidently this species occurred in the cotton fields about Victoria, Texas in late June. Mature macropterous females were taken in woods under logs in early July. Brachypterous males and females were collected in Colorado at Golden, June 5; Denver, June 17; Platte Canyon, June 10, and Grand Junction, July 7. Mr. Osler took a macropterous female at Canyon City. A pair of *Gryllus neglectus*, which may be considered a variety of this species, was taken at Canyon City in July by Osler.

153. *GRYLLUS PERSONATUS* Uhler.

Gryllus personatus UHLER, Proc. Ent. Soc. Philad., II, 1864, p. 547.

Two males, three females, Grand Junction, by Osler, all macropterous; one brachypterous male was taken at Winslow, Arizona, by Messrs. Schwarz and Barber.

154. *ŒCANTHUS QUADRIPUNCTATUS* Beutenmüller.

Œcanthus quadripunctatus BEUTENMÜLLER, Bull. Amer. Mus. Nat. Hist., VI, 1894, pp. 250-251, 271, fig. 5.

This species is quite common in the cotton fields of southern Texas. Specimens were also collected in Colorado at Fort Collins.

EXPLANATION OF PLATE LV.

Fig. 1. *Melanoplus coloradus*, new species, male.

- 1^a. *Melanoplus coloradus*, new species, male, end of abdomen.
2. *Psiniidia sulcifrons* var.-*amplicornis*, new variety, female.
3. *Heliastus guamiæri*, new species, female.
4. *Melanoplus latifercula*, new species, male.
- 4^a. *Melanoplus latifercula*, new species, male, end of abdomen.